

**UNITED STATES OF AMERICA  
DEPARTMENT OF TRANSPORTATION  
FEDERAL AVIATION ADMINISTRATION  
RENTON, WASHINGTON 98055-4056**

In the matter of the petition of

**Gulfstream Aerospace Corporation**

For an exemption from § 25.785(b) of  
Title 14, Code of Federal Aviation Regulations

**Regulatory Docket No. FAA-2003-16074**

**GRANT OF EXEMPTION**

By letter dated August 29, 2003, David K. Neese, Certification Manager, DAS Administrator, Gulfstream Aerospace Corporation, 7440 Aviation Place, Dallas, Texas 75235, petitioned for an amendment to Exemption No. 7296 (Regulatory Docket No. 30056) which was issued on August 2, 2000. The petition was submitted for Israel Aircraft Industries Galaxy model.

The FAA's Partial Grant of Exemption provided certain relief from the general occupant protection requirements of 14 CFR 25.785(b) [Title 14, Code of Federal Regulations, Section 25.785(b)] for persons occupying multiple-place, side-facing seats manufactured by ERDA, Inc. during takeoff and landing. The partial grant applied only to Galaxy model airplanes manufactured prior to January 1, 2004.

Subsequently, Gulfstream Aerospace Corporation acquired Galaxy Aerospace Company LP, Type Certificate A53NM, for the Galaxy model airplane and renamed the airplane the Gulfstream 200. The petitioner now requests that Exemption No. 7296 be amended to apply to seats in addition to those manufactured by ERDA, Inc. and to airplanes manufactured after January 1, 2004.

**The petitioner requests relief from the following regulation:**

Section 25.785(b), Amendment 25-64, requirements for general protection for occupants of multiple-place side-facing seats that are occupied during takeoff and landing.

**The petitioner's supportive information is quoted below:**

Federal Aviation Regulations (FAR) Part 25 was amended June 16, 1988 by amendment 25-64, to revise the emergency landing conditions that must be considered in the design of the airplane. Amendment 25-64 revised the static load conditions in § 25.561 and added a new § 25.562, which required dynamic testing for all seats approved for occupancy during takeoff and landing.

The intent of Amendment 25-64 was to provide an improved level of safety for occupants of transport category airplanes. Because most seats are forward facing, the pass/fail criteria developed in Amendment 25-64 focused primarily on the forward-facing seats. FAA Memorandum, "Side-Facing Seat on Transport Category Airplanes", dated November 19, 1997 and FAA "Draft Issue Paper", dated November 12, 1997, identify occupant protection criteria for side-facing seats in addition to those required by §25.562.

On March 17, 2000, Galaxy Aerospace Company, LP and Nordam Group petitioned the FAA, seeking relief from the requirements for general occupant protection, for those occupying multiple-place side-facing seats during taxi, takeoff and landing, Title 14 Code of Federal Regulations (CFR), §25.785(b), amendment 25-64. The petition was submitted for Israel Aircraft Industries (IAI), Galaxy model airplane.

On August 2, 2000, FAA Transport Airplane Directorate (TAD) granted partial Exemption No. 7296 (attached for reference) to Galaxy Aerospace Company, LP and Nordam Group. The "Partial Grant of Exemption" provided temporary and partial relief from § 25.785(b), including an exemption expiration of January 1, 2004.

On September 18, 2000, Galaxy Aerospace Company, LP applied for a "multiple" STC to install a three-place side-facing divan in the IAI, Galaxy, certified for taxi, takeoff and landing, and on December 15, 2000 the Special Certification Office, ASW-190, issued STC ST09848SC.

In April of 2001, Gulfstream Aerospace Corporation acquired Galaxy Aerospace Company LP inclusive of FAA Type Certificate A53NM. As a part of this acquisition, the Galaxy model airplane was renamed the Gulfstream 200. Effective with S/N 057, the IAI model Galaxy became Gulfstream Aerospace LP model Gulfstream 200. STC ST09848SC for the installation of a 3 place side-facing divan certified for takeoff and landing, was also transferred to Gulfstream Aerospace Corporation, Dallas, Texas.

Gulfstream Aerospace Corporation Dallas, Texas hereby petitions the FAA for a permanent extension of Exemption No. 7296. For clarity of model effectively, this request is inclusive of the Galaxy and Gulfstream 200 model airplanes manufactured after January 1, 2004. Additionally, this petition is requested to be exempt from publication and public comment procedure, as the basis for "Partial Grant of Exemption" has not changed.

Nearly all cabin seating arrangements in the Galaxy/Gulfstream 200 aircraft include the installation of the side-facing divan. Publication of this petition for exemption extension, including a public comment period for extending the exemption could delay timely action on this petition and create aircraft delivery delays inducing significant economic loss to Gulfstream Aerospace Corporation.

In summary, on August 2, 2000, Galaxy Aerospace and Nordam Group were granted Partial Exemption No. 7296. This exemption provided temporary relief from the occupant protection requirements for passengers occupying multiple-place side-facing seats. Gulfstream Aerospace Corporation Dallas, Texas, requests the FAA grant a permanent extension to Exemption No. 7296, and waive the requirement for posting the petition in the federal register for public comments.

On September 19, 2003, Mr. David K. Neese, Certification Manager, DAS Administrator, Gulfstream Aerospace Corporation, requested in a telephone conversation with Michael Thompson of the FAA, Transport Airplane Directorate, that the exemption be applicable only to multiple-place side-facing seats installed in accordance with Supplemental Type Certificate ST09848SC; he also requested that its applicability not be restricted to seats manufactured by ERDA, Inc.

**The FAA's finding concerning notice and public comment is as follows:**

The FAA finds, for good cause, that action on this petition should not be delayed by publication and comment procedures, because a grant of exemption would not set a precedent.

**The Federal Aviation Administration's analysis/summary is as follows:**

Exemption No. 7296 was granted with limitations that restricted its applicability to multiple-place side-facing seats manufactured by ERDA, Inc. and to airplanes manufactured before January 1, 2004. The petitioner has requested that these limitations be removed.

Side-facing seats are considered a novel design for transport category airplanes that include Amendment 25-64 in their certification bases and were not considered when those airworthiness standards were promulgated. Hence, the existing regulations do not provide adequate or appropriate safety standards for occupants of multiple-place side-facing seats. The FAA has been conducting research to develop an acceptable method of compliance with § 25.785(b) for installations of multiple-place side-facing seats.

In the absence of an acceptable method of compliance, the FAA finds that it is in the public interest to grant an exemption to the petitioner for Gulfstream 200 (Galaxy) model airplanes. It should be noted that this public interest argument does not justify granting exemptions once an acceptable method of compliance with § 25.785(b) has been developed. As a result, the FAA does not intend to grant similar exemptions once an acceptable method of compliance has been developed.

The FAA has determined that there is no technical basis for limiting Exemption No. 7296 to a specific seat manufacturer. Therefore, Exemption No. 7296 will be amended to remove this limitation.

### **The Grant of Exemption**

In consideration of the foregoing, I find that an amendment to Exemption No. 7296 is in the public interest and will not affect the level of safety provided by the regulations. Therefore, pursuant to the authority contained in 49 U.S.C. §§ 40113 and 44701, delegated to me by the Administrator, Gulfstream Aerospace Corporation is hereby granted an amendment to Exemption No. 7296 to remove the limitations that restrict its applicability to seats manufactured by ERDA, Inc. and to airplanes manufactured before January 1, 2004. This exemption is applicable to Gulfstream 200 (Galaxy) model airplanes installed in accordance with Supplemental Type Certificate ST09848SC. All other limitations of Exemption No. 7296 apply to this amendment. These limitations are provided below:

1. Existing Criteria: All injury protection criteria of § 25.562(c)(1) through (c)(6) apply to the occupants of side-facing seating. Head Injury Criterion (HIC) assessments are only required for head contact with the seat and/or adjacent structures.
2. Body-to-Body Contact: Contact between the head, pelvis, or shoulder area of one Anthropomorphic Test Dummy (ATD) on the adjacent seated ATD's is not allowed during the tests conducted in accordance with § 25.562(b)(1) and (b)(2). Incidental contact of the legs, feet, arms, and hands that will not result in incapacitation of the occupants is acceptable. Any contact between adjacent ATD's is acceptable during rebound.
3. Body-to-Wall/Furnishing Contact: If the sofa is installed aft of a structure such as an interior wall or furnishing that may contact the pelvis, upper arm, chest, or head of an occupant seated next to the structure, then a conservative representation of the structure and its stiffness must be included in the tests. In most cases, the representation of the structure would be more rigid and have less deflection under load than the actual installation on the airplanes. The contact surface of this structure must be covered with at least two inches of energy absorbing protective foam, such as ensolite.
4. Thoracic Trauma: Thoracic Trauma Index (TTI) injury criteria must be less than 85, as defined in 49 CFR part 572, subpart F. Thoracic trauma index data must be processed as defined in Federal Motor Vehicle Safety Standard (FMVSS) part 571.214, section S6.13.5.
5. Pelvis: Pelvic lateral acceleration must not exceed 130g. Pelvic acceleration data must be processed as defined in FMVSS part 571.214, section S6.13.5.
6. Shoulder Strap Loads: Where upper torso straps (shoulder straps) are used for sofa occupants, tension loads in individual straps must not exceed 1,750 pounds. If dual straps are used for restraining the upper torso, the total strap tension loads must not exceed 2,000 pounds.
7. Seat Positions: All seat positions need to be occupied by ATD's for the longitudinal tests.

8. Occupant Retention: All side-facing seats require end closures or other means to prevent the occupant from translating off the seat.

9. Longitudinal Tests: For the longitudinal tests conducted in accordance with the conditions specified in § 25.562(b)(2), a minimum number of tests will be required as follows:

a. One test will be required with ATD's in all positions, with undeformed floor, 10 degrees yaw, and with all lateral supports (armrests/walls). For configurations with a wall or bulkhead immediately forward of the forward seat position on the sofa, a SID ATD must be used in the forward seat position and a Hybrid II ATD(s) or equivalent must be used at all other seat locations. For configurations without a wall or bulkhead immediately forward of the forward seat, Hybrid II ATD's or equivalent must be used in all seat locations.

b. One test will be required with Hybrid II ATD's or equivalent in all positions, with deformed floor, 10 degrees yaw, and with all lateral supports (armrests/walls). This could be considered the structural test as well.

10. Vertical Test: For the vertical test, conducted in accordance with the conditions specified in § 25.562(b)(1), Hybrid II ATD's or equivalent must be used in all seat positions.

Issued in Renton Washington, on November 24, 2003.

/s/ Ali Bahrami  
Acting Manager  
Transport Airplane Directorate  
Aircraft Certification Service, ANM-100